3290 Hamal Circle, Monument, CO 80132 • 719.375.5855 • saf@saf-engineering.com

# Scott A. Fawaz

## Summary of Qualifications

- Aircraft Structural Integrity
- Fracture Mechanics and Fatigue Analysis
- Risk Analysis and Assessment
- Environmentally Assisted Cracking
- Design and Analysis of Aircraft Structures
- Finite Element Analysis
- Static Strength, Static Stability, and Fatigue Testing and Analysis
- High Performance Computing
- Program Management

## Experience

| Apr 2007 to Present | SAFE Inc. | Monument, CO |
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**President**

- FAR Part 25 Stress and Fatigue and Damage Tolerance (FDT) Engineering Services
  - Boeing 767, 757, 737, Airbus A320, Gulfstream GIII, GIV, GV, Lockheed Constellation L1649
  - Dimensional Restoration of Aircraft Structures using Supersonic Particle Deposition
- Principal Investigator / Program Director
  - Effect of Galvanic Coupling and Corrosion Inhibiting Coatings on Environmentally Assisted Cracking, Office of Naval Research, 2015 - 2018
  - Technical and Scientific Material Testing Support Services for the Federal Railway Administration Tank Car Safety Program Requirement, 2015 - 2017
  - Predicting and Managing Atmospheric Corrosion in DOD High Strength Aluminum Alloys, USAF Academy 2014 – 2018
  - Corrosion Fatigue Test Protocol, Office of Naval Research, 2013 - 2016
  - Research and Development Transfer of Corrosion Prevention and Control Technologies - Mechanical Impacts of Corrosion Damage, University of Akron, 2013 - 2016
  - Managing Environmental Impacts on Time-Cycle Dependent Structural Integrity of High Performance DoD Alloys, USAF Academy, 2011 - 2015
  - Corrosion Design Rating, 2011 - 2014
- Analysis of KC-135 Teardown Failure Analysis Findings, 2012 - 2016
- Department of Defense (DoD) Major Defense Acquisition Program Corrosion Evaluation -- Boeing KC-46A Tanker Corrosion, Combat Rescue Helicopter, 2011 - Present
- Subject Matter Expert -- USAF Corrosion Gap Analysis Team, 2011
- Advisory and Assistance Engineering Services to Office of the Under Secretary for Acquisition, Technology and Logistics, Director of Corrosion Policy and Oversight, 2010 - Present
- F-22/F-35 Corrosion Evaluation - Structures Lead, 2009 - 2010

| Apr 2011 to Dec 2011 | Avenger Aircraft and Services, LLC | Greenville, SC |
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**Vice President of Engineering – Special Projects**

- Stress, Design/Construction, FDT Analysis of Repairs and Modifications for Part 23 / 25 Airplanes to include Boeing 757 / 767, Gulfstream II / III / IV, Lockheed C-130 / L1649, Cessna 402C, Socata TBM 700, and Beechcraft King Air
- Lead – C-20B Structural Life Extension Program
- Evaluate and update company FDT methods and processes

| Apr 2010 to Apr 2011 | Gulfstream Aerospace Corporation | Savannah, GA |
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**Lead - G650 Fatigue and Damage Tolerance Group**

- Perform G650 Lead FDT duties to include planning, scheduling, and technical performance
- Develop Metal-to-Metal Bonding FDT Certification Program
- Lead Full Scale Fatigue Test FDT Requirements Development
- Lead FDT Certification Report Release
- Evaluate and update company FDT methods and processes
  - Developed FDT methods and reference community of practice website

| Sep 2008 to Mar 2010 | United States Air Force Academy | USAF Academy, CO |
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**Technical Director - Center for Aircraft Structural Life Extension (GS-15)**

- USAFA's largest research center, directs all technical activities of 19-member gov't / contractor team
- Program Manager / Integrator for $40M KC-135 Teardown Analysis Program
  - Assess and disposition all non-destructive inspection (NDI) findings
  - Conduct risk analyses of KC-135 fatigue critical structure
- Leads over $5M in externally funded structural integrity research and development programs in the Department of Defense (DOD) and Department of Homeland Security (DHS)
  - Performs durability and damage tolerance analysis (DADTA) of jet trainer aircraft
  - Developed and designed test and analysis program to determine the effects of corrosion inhibitors on fatigue performance of aerospace aluminum alloys
  - Perform finite element analysis on multi-billion degree of freedom aircraft structural models

| Jun 2003 to Aug 2008 | United States Air Force Academy | USAF Academy, CO |
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**Director - Center for Aircraft Structural Life Extension, Assistant Professor**

- Supervises all technical and programmatic activities of 16-member government/contractor team
- Responsible for over $11M in externally funded aging aircraft research and development programs in the Department of Defense (DOD) and Department of Homeland Security (DHS)
- Program manager and technical lead for the $9M Air Vehicle Health Management program executed by the USAF Aging Aircraft squadron, Wright-Patterson AFB
- Lead team that developed new test data and analysis methodology to predict the severity of dent damage to transport type aircraft fuselage structure resulting in savings of over $250M/year.
- Lead five aircraft teardown and failure analysis programs -- results used to determine actual structural condition and assess aircraft fleet safety
- Managed USAF, NASA, industry, and academia aging aircraft research programs
- Executed four cooperative research and development agreements with universities and industry
- Oversaw 50+ cadet research projects integrating curricular outcomes and USAF aging aircraft problems

| Jun 2001 to Jun 2003 | Air Force Research Laboratory | Wright Patterson AFB, OH |
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**Chief - Structural Mechanics Division, Chief - Systems Division, Assistant Professor**

- As chief, Structural Mechanics Division, responsible for four academic majors' courses in aircraft design / analysis, finite element analysis, composite design / analysis, and vibrations for 167 engineering students
- Directly supervised two civilian professors, four research engineers, and two technicians
- As chief, Systems Division had total leadership responsibility for 14 instructors teaching 12 engineering courses serving 515 cadets
- Served on the selection panel for two critical department hires

| Sep 1999 to Jul 2000 | Air Force Research Laboratory | Wright Patterson AFB, OH |
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**Chief - Analytical Structural Mechanics Branch, Air Vehicles Directorate**

- Supervised 7 military and 19 civilian employees overseeing $20M in structural integrity and thermal management research and development
- Coordinated program / technical mgmt. review activities for $15M in advanced development programs
- Orchestrated all program reviews for $7M Corrosion Fatigue Structural Demonstration program -- developed and chaired advisory committee -- negotiated manpower work-share amongst USAF
- USAF lead on five nation international cooperative R&D agreement on aircraft multi-site fatigue damage

| Sep 1997 to Sep 1999 | Air Force Research Laboratory | Wright Patterson AFB, OH |
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**Deputy Chief - Analytical Structural Mechanics Branch, Air Vehicles Directorate**

- Responsible for operation of 5 military / 19 civilian employee organization and $290M structural test facility -- $7M/year in aerospace structural integrity research, development, and technology transition
- Lead $10M Wide Spread Fatigue Damage (WFD) effort for the AFRL's Aging Aircraft Program
- Developed, validated, and transitioned aerospace fatigue life analysis tools to USAF product centers, depots, NASA, and FAA
- Linked aircraft fuselage fatigue life to production process ---increased accuracy of life

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predictions -- improved aircraft life cycle costs estimates by 20%

- USAF lead for joint USAF / NASA / FAA/ industry WFD program -- restructured test plan resulted in 1000% increase in data collection and 50% decrease in test time

Evaluated $1M USAF / FAA aircraft structural life risk assessment software -- unsafe for USAF use

| Apr 1992 to Jun 1994 | United States Air Force Academy | USAF Academy, CO |
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**Assistant Professor**

- Director of department's largest major's course, "Analysis of Aerospace Structures," supervising five officer instructors in lesson content and administration for 146 cadets
- Instructor of interdisciplinary course, "Aircraft Structural Design" required by 80% of engineering programs
- Officer-in-Charge, lead the 63 member Cadet Chapter of the ASME
- Officer-in-Charge, Cadet Modeling Engineering Club, directed a 400% membership increase.
- Provided career and academic counseling for 35 freshman cadets as the Associate Air Officer Commanding for Academics for Fourth Cadet Squadron

| Aug 1991 to Apr 1992 | San Antonio Air Logistics Center | San Antonio, TX |
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**Lead DTA Engineer, Lead Engineer C-5 Aircraft Battle Damage Repair Team**

- Lead team of eight engineers analyzing, predicting, and controlling fatigue cracking in safety of flight structure on the C-5A/B, C-17A, O/A/T-37B, T-38, F-5, and OV-10 aircraft
- Designed, analyzed, and approved standard repairs, structural modifications, and NDI requirements
- Validated damage tolerance of in-service C-5A engine pylons -- prevented a work stoppage and unnecessary delays in programmed depot maintenance -- $2.4M cost avoidance for new pylons
- Analyzed severe cracking in major structural elements of the C-5A and mandated a fracture control plan which removed flight restrictions and returned 12 aircraft to service
- Conducted a risk assessment of the T-38 wing using inspection results from 24 high-time aircraft which justified an immediate inspection and modification program for the fleet

| Feb 1990 to Aug 1991 | San Antonio Air Logistics Center | San Antonio, TX |
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**DTA Engineer, C-5A/B Aircraft Structural Integrity Program Manager**

- Responsible for DADTA of C-5A/B, C-17A, O/A/T-37B, T-38, F-5, and OV-10 aircraft
- Directed and interacted with engineers, maintenance, and operations personnel from two aircraft operating commands as well as support commands and defense contractors
- Examined severe fire damage and temporary repair of C-5 prior to release for one-time flight to depot
- Supervised and directed ground testing of C-5 aft pressure door end fittings, reconstructed stress spectra, and then determined critical crack sizes
- Performed finite element and crack growth analysis of C-5 pylon to wing attachment structure which resulted in a fleet wide safety inspection
- Training Officer, C-5 Aircraft Battle Damage Repair Team.

## Education

| Sep 1994 – Sep 1997 | Delft University of Technology | Delft, The Netherlands |
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**PhD – Aerospace Engineering**

- Dissertation, "Fatigue Crack Growth in Riveted Joints"

| Aug 2000 – Jun 2001 | Air Command and Staff College | Maxwell AFB, AL |
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**MS – Military Operational Art and Science**

- Thesis, "Impact of Parameter Accuracy on Aircraft Structural Integrity Estimates"

| Jul 1987 – Dec 1988 | Air Force Institute of Technology | Wright-Patterson AFB, OH |
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**MS – Aeronautical Engineering**

- Thesis, "Axial Tensile / Compressive Properties of High-Performance Polymeric Fibres"

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| Aug 1983 – May 1987 | United States Air Force Academy | USAF Academy, CO |

**BS – Engineering Mechanics**

## Specialized Training

USAF Acquisition Professional Development Program: Program Management Level II, Systems Planning, Research, Development and Engineering Level III, Aug 1994
USAF Aircraft Battle Damage Repair Engineer Course, Aug 1989
USAF Aircraft Battle Damage Repair Assessor Course, Jul 1989
USAF Aircraft Battle Damage Repair Technician Course, Jun 1989

## Licenses/Certificates

FAA Designated Engineering Representative (DER), Structures - Stress / Fatigue and Damage Tolerance
Professional Engineer, Colorado, License Number 29715; South Carolina, License Number 28862

## Awards

USAF Research and Development Engineer of the Year, 2006
Frank J. Seiler Research Award for Research Excellence in Engineering, USAF Academy, 2003
Department of Engineering Mechanics Company Grade Officer of the Quarter, USAF Academy, 1993, 1994
Angel Award for Volunteerism, USAF Academy, 1993
Department of the Air Force, Meritorious Service Medal, 1994, 2000, and 2008
Department of the Air Force, Commendation Medal, 1992
Department of the Air Force, Achievement Medal, 1990, 1991

## Professional Affiliations

Member, American Institute of Aeronautics and Astronautics (AIAA)
Member, American Society of Mechanical Engineers (ASME)
Member, National Council of Examiners for Engineering and Surveying (NCEES)

## Publications

Archival Journal

Fawaz, S. A. and D. W. Hill. (2009). "Validation of Stress Intensity Factor Solution for Diametrically Opposed Corner Cracks in a Hole." International Journal of Fatigue 31; pp. 712-718

Fawaz, S. A. and B. Andersson. (2004). "Accurate Stress Intensity Factor Solutions for Corner Cracks at a Hole." Engineering Fracture Mechanics 71: 1235-1254.

Fawaz, S. A. (2003). "Equivalent Initial Flaw Size Testing and Analysis of Transport Aircraft Skin Splices." Fatigue and Fracture of Engineering Materials and Structures 26: 279-290.

de Rijck, J. J. M. and S. A. Fawaz. (2001). "Stress Intensity Factors and Crack Interaction In Adjacent Holes." Engineering Fracture Mechanics 68: 963-969.

Fawaz, S. A. and J. J. M. de Rijck. (1999). "A Thin Sheet, Combined Tension and Bending Specimen." Experimental Mechanics 39: 171-176.

Fawaz, S. A. (1999). "Stress Intensity Factor Solutions for Part-Elliptical Through Cracks." Engineering Fracture Mechanics 63: 209-226.

Fawaz, S. A. (1998). "Application of the Virtual Crack Closure Technique to Calculate Stress Intensity Factors for Through Cracks with an Elliptical Crack Front." Engineering Fracture Mechanics 59: 327-342.

Fawaz, S. A., Anthony N. Palazotto, and Chyi-Shan Wang (1992). "Axial Tensile and Compressive Properties of High-Performance Polymeric Fibres." Polymer 33.1: 100-105.

USAF Technical Reports

Shah, Sandeep R., Molly R. Walters, and Scott A. Fawaz (2008). Stress Corrosion Cracking Rates at

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Elevated Temperatures for 7079-T6 Thin Sheet Aluminum. United States Air Force Academy.

Shah, Sandeep R., Molly R. Walters, and Scott A. Fawaz (2005). Stress Corrosion Cracking Rates in 7079-T6 Sheet. United States Air Force Academy.

Greer, J. J. M., Daniel Hill, and Scott A. Fawaz (2005). Compression Buckling of Z-Stiffened Aluminum Panels, with and without Corrosion Grindouts, United States Air Force Academy.

Shoales, G. A. and S. A. Fawaz. (2004). Stress Concentration Factor Determination for Various Tensile Test Specimen Configurations by the Finite Element Method using MSC/PATRAN and MSC/NASTRAN, United States Air Force Academy.

Shoales, G. A. and S. A. Fawaz. (2004). E-8/B-707 Wing Station 320 Transition Fit Fastener Finite Element Analysis, United States Air Force Academy.

Brown, Molly, and S. A. Fawaz (2004). Fatigue Performance of Exfoliated E-8C Upper Wing Skin Material, United States Air Force Academy.

Fawaz, S. A. and Jim Harter. (2001). Impact of Parameter Accuracy on Aircraft Structural Integrity Estimates, Air Force Research Laboratory.

Fawaz, S. A. (2000). Equivalent Initial Flaw Size Testing and Analysis, Air Force Research Laboratory.

de Rijck, J. J. M. and S. A. Fawaz. (2000). Stress Intensity Factors and Crack Interaction In Adjacent Holes, Air Force Research Laboratory.

Conference Proceedings

Hammond, Matthew and Scott Fawaz (2012). Stress Intensity Values for Finite Width Plates. Proceedings of the 2012 Aircraft Airworthiness & Sustainment Conference, Baltimore, MD.

Galyon Dorman, Sarah, Yongwon Lee, Deborah M. Sweeney, Jenifer Warner, Ralph Bush, Scott A. Fawaz (2010), “Environmental Fatigue Crack Propagation in AA 7075-T651,” Proceedings of the 2010 Aircraft Airworthiness & Sustainment Conference, Austin, TX.

Hammond, Matthew, James Greer, Scott Fawaz, Borje Andersson, Robert Rainsberger, Monica Poelking (2010), “Detailed Three-Dimensional Modeling of the C-130 Center Wing Box for Damage Tolerance Analyses,” Proceedings of the 2010 Aircraft Airworthiness & Sustainment Conference, Austin, TX.

Arunachalam, Saravanan R., Sandeep R. Shah, Gregory A. Shoales, Scott A. Fawaz (2010), “C/KC-135 Teardown Analysis Program, Protocol Protocol 8: Failure Analysis, Development and Execution,” Proceedings of the 2010 Aircraft Airworthiness & Sustainment Conference, Austin, TX.

Shah, Sandeep R., Gregory A. Shoales, Scott A. Fawaz (2010), “C/KC-135 Teardown Analysis Program, Protocol 6: CPC and Lapjoint Evaluation, Development and Execution,” Proceedings of the 2010 Aircraft Airworthiness & Sustainment Conference, Austin, TX.

Galyon Dorman, Sarah E., James Greer, Scott Fawaz, Herve Chevalier, Monica Poelking (2010), “3-D Crack Growth and Residual Strength in Titanium,” Proceedings of the 2010 Aircraft Airworthiness & Sustainment Conference, Austin, TX.

Andersson, Borje and Scott Fawaz (2009). Solution of Ultra-Large Structural Mechanics Problems during CAP-I 2008 on the IBMPOWER6 System DAVINCI. The 2009 High Performance Computing User Group Conference, San Diego, CA.

Galyon, Sarah E., Saravanan R. Arunachalam, James Greer, Matthew Hammond, and Scott A. Fawaz (2009). Three Dimensional Crack Growth Prediction. The 25th Symposium of the International Committee on Aeronautical Fatigue, Rotterdam, NL.

Shoales, Gregory A. Scott Fawaz, and Molly Walters (2009). Compilation of Damage Findings from Multiple Recent Teardown Analysis Programs. The 25th Symposium of the International Committee on Aeronautical Fatigue, Rotterdam, NL.

Shah, Sandeep, Scott Fawaz, and Molly Walters (2009). On Separating the Effect of Corrosion on Inter-Lamellar Fatigue of Thin Sheet AA7079-T6. The 25th Symposium of the International Committee on Aeronautical Fatigue, Rotterdam, NL.

Fawaz, Scott A. (2009). KC-135 Teardown Program Development. The 11th Joint FAA/NASA/DOD Conference on Aging Aircraft, Kansas City, MO.

Hill, Daniel, and Scott A. Fawaz (2009). Validation of Stress Intensity Factors. The 11th Joint FAA/NASA/DOD Conference on Aging Aircraft, Kansas City, MO.

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Galyon, Sarah E., James Greer, Saravanan R. Arunachalam, Matthew Hammond, and Scott Fawaz (2009). 3D Crack Growth and Residual Strength. The 11th Joint FAA/NASA/DOD Conference on Aging Aircraft, Kansas City, MO.

Shah, Sandeep, Scott Fawaz, and Molly Walters (2008). Stress Corrosion Cracking Rates at Elevated Temperatures for 7079-T6 Thin Sheet Aluminum. The 2008 USAF Aircraft Structural Integrity Program Conference, San Antonio, TX.

Shah, Sandeep, Greg Shoales, and Scott Fawaz (2008). Lap Joint Integrity and Corrosion Preventive Compound (CPC) Evaluation using Electrochemical Impedance Spectroscopy (EIS). The 2008 USAF Aircraft Structural Integrity Program Conference, San Antonio, TX.

Fawaz, Scott and Borje Andersson (2008). Fast and Reliable Solution of GDOF-problems on NAVO/BABBAGE and AFRL/HAWK Systems. The 2008 High Performance Computing User Group Conference, Seattle, WA.

Walters, M. R., Sandeep Shah, and S. A. Fawaz (2007). SCC in AA7079-T6 Fuselage Skin Panels. The 9th Joint FAA/NASA/DOD Conference on Aging Aircraft, Palm Springs, CA.

Newman, J. C. Jr., I. S. Raju, and S. A. Fawaz (2007). The Evolution and Application of Three-Dimensional Stress Intensity Factors. The George R. Irwin Centennial Conference, University of Maryland, College Park, MD.

Fawaz, S. A. (2007). The Effect of Stress Intensity Factor Models on Inspection Intervals. The 2007 USAF Structural Integrity Program Conference, Palm Springs, CA.

Fawaz, S. A. (2007). Using the Worlds Largest Stress Intensity Factor Database for Fatigue Life Predictions. The First International Conference on Damage Tolerance of Aircraft Structures, Delft, The Netherlands.

de Rijck, J. J. M., S. Fawaz, J. Schijve, R. Benedictus, and J. J. Homan (2007). Stress Analyses of Mechanically Fastened Joints in Aircraft Fuselages. The 24th Symposium of the International Committee on Aeronautical Fatigue, Naples, IT.

Andersson, B. and S. A. Fawaz. (2007). Statistical Fatigue and Residual Strength Analysis of New/Aging Aircraft Structure. The 2007 High Performance Computing User Group Conference, Pittsburgh, PA.

Andersson, B. and S. A. Fawaz. (2006). Statistical Fatigue and Residual Strength Analysis of New/Aging Aircraft Structure. The 2006 High Performance Computing User Group Conference, Denver, CO.

Verhoeven, S., C. Guijt, and S. Fawaz (2005). Bonded Repair of Exfoliation Corrosion. The 8th Joint DOD/FAA/NASA Conference on Aging Aircraft, Palm Springs.

Shiao, M., Kevin Boyd, and S. A, Fawaz (2005). A Risk Assessment Methodology and Tool for Probabilistic Damage Tolerance-Based Maintenance Planning. The 8th Joint DOD/FAA/NASA Conference on Aging Aircraft, Palm Springs, CA.

Guijt, C., Daniel Hill, Justin Rausch, and Scott Fawaz (2005). The Effect of Dents in Fuselage Structures on Fatigue and Static Stability. The 23rd Symposium of the International Committee on Aeronautical Fatigue, Hamburg, GE, EMAS.

Greer, J. J. M., M. Brown, R. Bush, S. Fawaz, C. Guijt (2005). Fatigue and Residual Strength Effects of Exfoliation Corrosion Damage. The 8th Joint DOD/FAA/NASA Conference on Aging Aircraft, Palm Springs, CA.

Andersson, B. and S. A. Fawaz. (2004). Statistical Fatigue and Residual Strength Analysis of New/Aging Aircraft Structures. High Performance Computing User Group Conference, Williamsburg, VA.

Fawaz, S. A., B. Andersson, J. C. Newman, Jr. (2003). Experimental Verification of Stress Intensity Factor Solutions for Corner Cracks at a Hole Subject to General Loading. Proceedings of the 22nd Symposium of the International Committee on Aeronautical Fatigue, Lucerne, EMAS.

de Rijck, J. J. M. and S. A. Fawaz. (2003). Stress Analysis of Mechanically Fastened Joints and Stress Intensity Factor Solutions for Countersunk Holes under General Loading. The 22nd Symposium of the International Committee on Aeronautical Fatigue, Lucerne, Switzerland, EMAS.

de Rijck, J. J. M. and S. A. Fawaz. (2003). Stress Intensity Factor Solutions for Countersunk Holes Subjected to Combined Loading. The 7th Joint DOD/FAA/NASA Conference on Aging Aircraft, New Orleans, LA.

Ingram, J. E., Y. S. Kwon, and S. A. Fawaz (2002). 3D Finite Element Modeling of MSD-Cracked Structural

Joints. The 6th Joint DOD/FAA/NASA Conference on Aging Aircraft, San Francisco, CA.

de Rijck, J. J. M. and S. A. Fawaz. (2002). Stress Intensity Factors Solutions for Countersunk Holes Subjected to Tension, Bending and Pin Loading. The 6th Joint DOD/FAA/NASA Conference on Aging Aircraft, San Francisco, CA.

Ingram, J. E., Y. S. Kwon, and S. A. Fawaz (2001). 3D Finite Element Modeling of Aircraft Structural Joints with Multiple Site Damage. The 8th International Fatigue Conference, Stockholm, Sweden.

Fawaz, S. A. and B. Andersson. (2000). Accurate Stress Intensity Factor Solutions for Unsymmetric Corner Cracks at a Hole. Proceedings of the Fourth Joint DOD/FAA/NASA Conference on Aging Aircraft, St. Louis, MO.

de Rijck, J. J. M. and S. A. Fawaz. (2000). A Simplified Approach for Stress Analysis of Mechanically Fastened Joints (Text, Figures). 4th Joint DOD/FAA/NASA Conference on Aging Aircraft, St. Louis, MO.

Fawaz, S. A., J. Lo, and C. Hsu (1999). Equivalent Initial Flaw Size Distribution in Fuselage Skin Splices. The Seventh International Fatigue Congress, Beijing, P.R. China.

de Rijck, R., S. A. Fawaz, J. Schijve, and A. Vlot (1999). Stress Intensity Factors and Crack Interaction of Part-Elliptical Through Cracks in Adjacent Holes (Text, Figures). 20th Symposium of the International Committee on Aeronautical Fatigue, Bellevue, WA, EPIC.

Fawaz, S. A. and J. Schijve. (1998). Fatigue Crack Growth Predictions in Riveted Joints. 2nd Joint NASA/FAA/DOD Conference on Aging Aircraft, Williamsburg, VA.

Fawaz, S. A., J. Schijve, and A. U. de Koning (1997). Fatigue Crack Growth in Riveted Lap Splice Joints. 19th Symposium of the International Committee on Aeronautical fatigue, Edinburgh, Scotland, EMAS/SoMat Systems International Ltd.

Fawaz, S. A. (1997). Application of the Gel Electrode Method in Thin Sheet Fatigue Specimens. Delft, Delft University of Technology.

Fawaz, S. A. (1996). Application of the Virtual Crack Closure Technique to Calculate Stress Intensity Factors for Through Cracks with an Oblique Elliptical Crack Front. Delft, Delft University of Technology.

Fawaz, S. A. and J. Schijve. (1995). Crack Growth in Riveted Lap Joints. USAF Structural Integrity Program Conference, San Antonio, TX.

Fawaz, S. A. and J. Schijve. (1994). Multiple Site Damage (MSD) in a Pressurized Fuselage Riveted Lap Joint. USAF Structural Integrity Program Conference, San Antonio, TX.